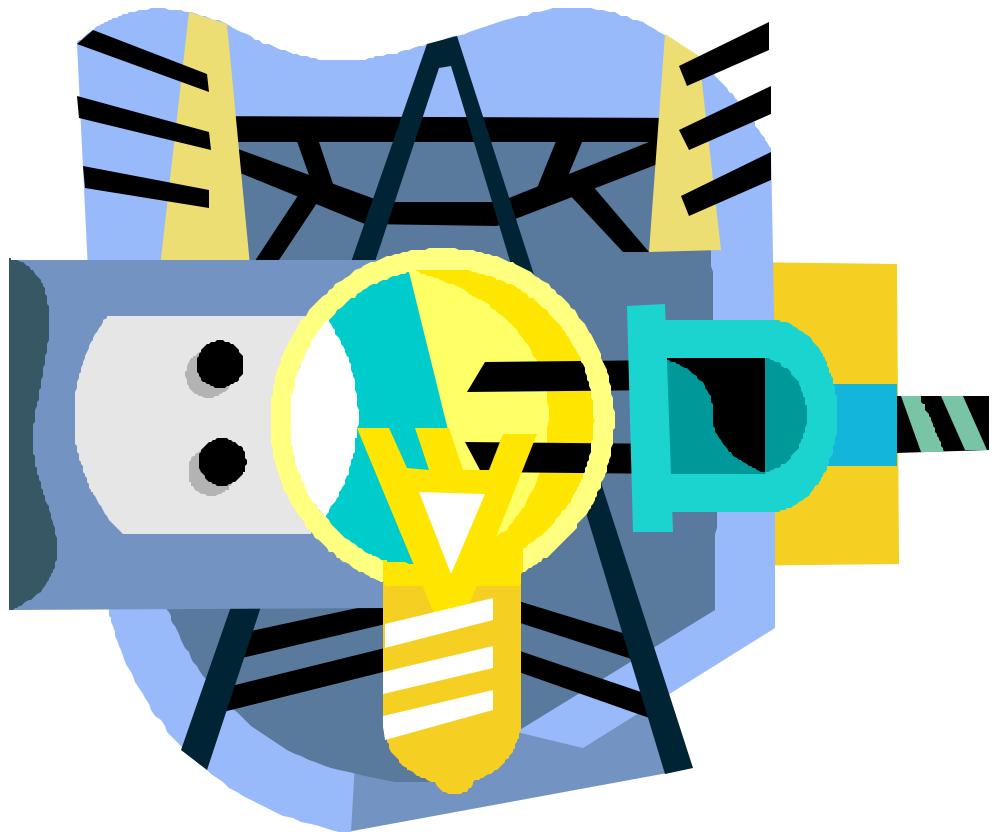


# The Electric Environment of Missouri and California



RAP-0201-1



# The Electric Environment of Missouri and California

## Table of Contents

- 1) Overview
- 2) California's Difficulties
- 3) Missouri Power
- 4) Missouri-California: A Comparison
  - a) Electric Costs
  - b) Production and Consumption
- 5) Summary
- 6) Definitions



## 1) Overview

The continuing energy problems plaguing the state of California has prompted a request to Research and Planning to compare the electrical distribution systems of the two states. This report will provide some background on California's current crisis, an overview of Missouri's current electrical energy environment, and a comparison between the two states.

Much of the debate surrounding electric utilities is related to restructuring the traditional way most consumers have received their electric service. Today, most regulated utilities are considered vertically integrated. That means they own or operate all of the three basic functions of providing electricity to consumers: generation, transmission and distribution.

Generation is the facility where electricity is produced. Transmission is the system that moves large amounts of high voltage electricity from the production point to distribution facilities. The distribution system includes the wires, transformers, substations and other equipment used by local utilities to deliver smaller voltages of electricity to individual consumers.

Utilities generate or purchase electricity and resell it through established rates. Electric rates include generating costs, repayment of equipment and facility purchases, the cost of delivering electricity across the transmission and distribution systems, and a return on the company's investment.

Under restructuring, choice would be created for the generation portion of the delivery system. Customers could choose among a number of power generators or marketers offering different electric supply options and rates. Supply options could include "green power" (cleaner resources like wind, hydro, biomass or solar power), and traditional types of power generation like nuclear, natural gas, steam or coal. The current local utility would still be responsible for transmitting and distributing electricity, but restructuring would offer consumers a choice in electric supply. Consumer bills would be unbundled to show the expense for each portion of electricity delivery (generation, transmission and distribution).



## 2) California's Difficulties

On January 17, 2001, more than 500,000 residents of central and northern California experienced the first of what have become regular “rolling black-outs” – the practice of shutting down electric power to certain areas on a rotating basis at times of insufficient power supply.

The state’s two largest electric utilities – Southern California Edison and Pacific Gas & Electric – have both defaulted on loans and face bankruptcy without some sort of government intervention.

Manufacturers are facing disruptions in production – as well as the prospect of soaring electric bills – because of the blackouts and the likely rate hikes that will accompany any future solution. Boeing Co., Southern California’s largest private employer, has cut shifts at some of its plants and is looking at paying tens of millions of dollars in rising electricity costs.<sup>1</sup>

By most accounts, California’s current problems are due to the implementation of the state’s electric deregulation plan. It has also been exacerbated by such divergent issues as the lack of locally generated power and the impact of a drier than expected winter on lake levels and hydroelectric production in the Pacific Northwest.

### Deregulation

California deregulated its electric utilities in 1996 – at a time when its electric rates were among the highest in the nation – with the hope that competition would result in more electrical providers and, ultimately, lower electric rates to consumers. A number of issues converged to make the high hopes of deregulation far more attractive than the realities of it. Among those issues were:

- ❖ **Unexpectedly High Demand** – At the time deregulation was implemented, California’s economy was still shaking off the cobwebs of recession. Without warning, the state’s energy-hungry, computer-based businesses roared to life, fueling a lively economic recovery and electricity demands far above projections.
- ❖ **Unexpectedly Low Competition** – More than 250 companies initially signed up to serve as electric service providers. However most never made it to the point of conducting business or failed soon after due to “...complex and still evolving rules governing deregulation [that] make it too expensive and difficult for small players to

---

<sup>1</sup> St. Louis Post Dispatch, “*California power mess hurts Boeing*,” January 25, 2001.

participate.<sup>2</sup> Today, fewer than 10 companies offer California homeowners electricity service.<sup>3</sup> Adding to the failure of new power providers was the fact that a very small percentage of customers actually left their current providers to sign on with the new startups.

- ❖ **Reliance on Out-Of-State Energy Providers** – Heavy regulation, active environmentalism and uncertainty surrounding deregulation discouraged producers from building new power plants in California. This made utilities more reliant on out-of-state providers to keep up with the state's growing demand. Upwards of 20 percent of the state's energy is purchased from out-of-state suppliers.<sup>4</sup>
- ❖ **Partial Deregulation** – The incomplete nature of deregulation contributed to the problem as well. State regulators capped the size of price increases utilities could pass along to customers, even though unregulated wholesale prices for energy were rising 10-fold in some instances. This put a heavy debt burden on the state's largest utilities, impacting their abilities to negotiate more efficiently with power wholesalers for better prices. By January 2001, electric wholesalers provided electricity to these utilities only by order of the federal government.

Then in late January 2001, the state of California approved the sale of \$10 billion in bonds to fund the purchase of electricity – negotiated by the state – for distribution by the utility companies. The action is considered a short-term solution, and many analysts believe that the state could be looking at even more severe power shortages in the summer of 2001.

“Our current supply/demand problem will continue through this summer [2000], next summer [2001] and possibly into the summer of 2002, depending on how quickly recently licensed power plants can be built, and other factors,” said William J. Keese, Chairman, California Energy Commission.<sup>5</sup>

Eventually, the price cap for customers of Pacific Gas and Electric and Southern California Edison will expire in 2002, giving these utilities the ability to pass along the higher rates for electricity. However, this means significantly higher power costs for California-based businesses and residents of that state.

---

<sup>2</sup> *The Wall Street Journal*, “California’s Power Deregulation Isn’t as Open as It Looks,” February 17, 1998.

<sup>3</sup> *The Los Angeles Times*, “How State’s Consumers Lost With Electricity Deregulation,” January 7, 2001.

<sup>4</sup> William J. Keese, Chairman, California Energy Commission, “*Electricity Supply/Reliability – 2000-2002*” August 10, 2000.

<sup>5</sup> *Ibid.*



### 3) Missouri Power

Although Missouri is one of 16 states with an on-going commission investigating electric restructuring, the Show-Me State continues to function under a traditional state-regulated monopoly franchise system. In exchange for this monopoly status, the utilities agreed to accept certain state government regulations including rate regulation and oversight by the Missouri Public Service Commission (PSC).

In 1997, the PSC created an investigatory docket as a formal means to identify the risks and benefits for Missouri in the event retail competition occurs. In addition, the PSC established a Retail Electric Competition Task Force to investigate and issue a report on the matter. The 35-member Task Force consisted of a diverse group of interested parties and, along with 24 other nominees, was divided into four working groups (Market Structure/Market Power, Stranded Costs, Public Interest Protection and Reliability).

In 1998, the Task Force issued a report identifying the key issues in the restructuring debate. Because of the diverse makeup of the Task Force, it did not offer a road map for implementing restructuring in Missouri (that was not the mission) rather it offered options and recommendations to help shape future restructuring discussions. If restructuring legislation is again introduced in the 2001 legislative session, then issues identified by the Task Force will continue to be a focal point for debate.

However, because of California's troubles, many states, including Missouri, are carefully studying the issue of electric deregulation.

"Perhaps Missouri will restructure its electrical industry even with all of the bad news coming from California," said Joseph Driskill, director of Missouri Director of Economic Development. "There are many variables in setting up a competitive system, and Missouri's plan, when one develops, surely would be designed to avoid the Golden State's calamities."<sup>6</sup>

---

<sup>6</sup> Joseph Driskill, Missouri Department of Economic Development, "*Troubles May Slow Drive To Deregulate Missouri's Energy Providers*," as appeared in Jefferson City Business Times, February 2001.



## 4) Missouri – California: A Comparison

The purpose of this section is to compare the electric power climate of Missouri and California. It will look at the most recent data available concerning the cost of electricity, as represented by the average revenue per kilowatt hour, and the states' ability to keep up with growing demand, as represented by the number of new power plants brought on line since 1996.

### Costs

The cost of electricity is evaluated by the type of customer (residential, commercial and industrial) as well as by the average of all three customer classes. Data is from the Energy Information Administration and based upon the average revenue per kilowatt hour (kWh) reported by the utility companies.<sup>7</sup>

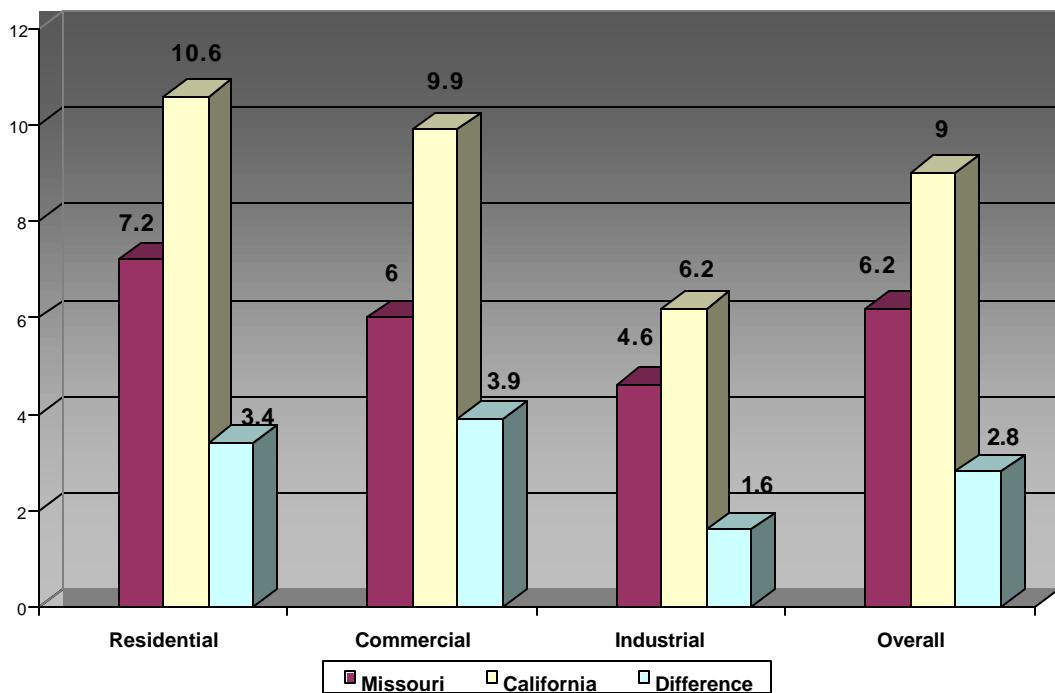
Overall, the combined average revenue per kWh for Missouri was 6.2 cents, 2.8 cents (45 percent) lower per kWh than California (9.0 cents per kWh). The chart below also shows that Missouri's cost of electricity is 3.4 cents cheaper per kWh for residential customers, 3.9 cents cheaper per kWh for commercial customers and 1.6 cents cheaper per kWh for industrial customers.

---

<sup>7</sup> Energy Information Administration, Form EIA-826, "Monthly Electric Utility Sales and Revenue Report, State Distributions."



Electric Utility Ave. Revenue per Kilowatthour



These figures are expected to increase greatly in California during the next 1-2 years as regulatory caps expire, or as regulators lift those caps in order to forestall bankruptcy by the state's primary utilities.

## Production and Consumption

Contributing to California's difficulties in transitioning to a market-based system for electricity has been the lack of power production within the state. By comparison, Missouri utilities provide more than enough electricity to meet the state's needs.

For instance, through October 2000, California power plants generated 74,323 million kWh of electricity,<sup>8</sup> but consumer demand was 208,199 million kWh.<sup>9</sup> On the other hand, Missouri power plants generated 62,509 million kWh<sup>7</sup>, while utilities sold just 60,682 million kWh to consumers<sup>8</sup>. Thus, Missouri does not have to rely on importing power from other states to meet its demand.

<sup>8</sup> Energy Information Administration, Form EIA-759, "Monthly Power Plant Report," October 2000.

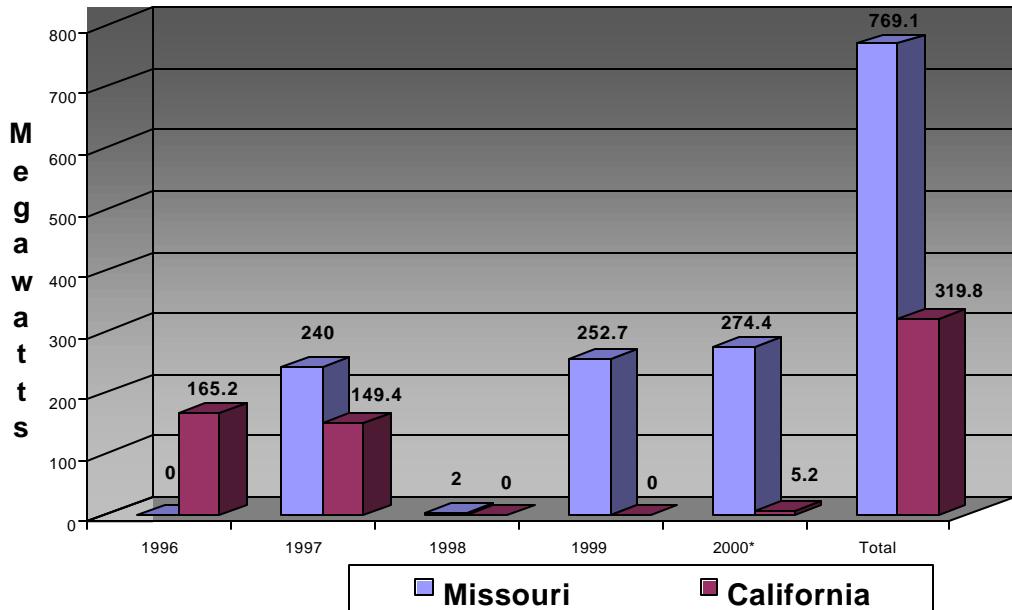
<sup>9</sup> Energy Information Administration, Form EIA-826, "Monthly Electric Utility Sales and Revenue Report, State Distributions," October 2000.

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

And while California utilities are currently scrambling to build more power plants, Missouri has increased its total megawatt hour production capacity by 140 percent compared to California in the past four years.

**Power Production Brought On Line -- 1996-2000\* (Megawatts)**



## 5) Summary

Based on the available information, the difficulties playing out in California are likely to get worse before they get better. Insufficient power production, an increasingly tight electricity market caused by increased demand in neighboring states, and the expiration of rate freezes in the next 12-24 months are likely to result in rates unusually high even by California standards.

In contrast, Missouri, in watching the California situation, has the advantage of approaching electric restructuring more cautiously. Meanwhile, electric rates remain stable because of continued regulation by the PSC and power production in Missouri continues to stay ahead of consumer demand.

# # #

## 6) Definitions<sup>10</sup>

**Blackout:** A power loss affecting many electricity consumers over a large geographical area for a significant period of time.

**Capability:** The maximum load that a generating unit, generating station, or other electrical apparatus can carry under specified conditions for a given period of time without exceeding approved limits of temperature and stress.

**Competition:** Two or more suppliers offering the same or similar goods or services in the same market place.

**Customer Class:** A distinction between users of electric energy. Usage patterns, usage levels and conditions of service usually define customer class. Typically defined by customer activity, example customer classes include Residential, Commercial, Industrial and Agricultural.

**Demand:** The amount of electricity that consumers use at any given moment or averaged over any certain period of time. It is a measure of the rate at which customers are using electricity.

**Deregulation:** Removal or relaxation of regulations or controls governing a business or service operation such as utilities. In the electric industry, restructuring is consider the better term since changing the electricity market may require new or additional regulations so it would not be considered “deregulation”.

**Electric Capacity:** The ability for a power plant to produce a given output of electric energy at a moment in time, measured in kilowatts or megawatts.

**Electric Plant (physical):** A facility that contains all the necessary equipment for converting energy to electricity.

**Electric Power Supplier:** Non-utility provider of electricity to a competitive marketplace.

**Electric System:** All the elements needed to distribute electric power. It includes overhead and underground lines, poles, transformers substations and other equipment.

**Electric Utility:** A legal entity that owns and/or operates facilities for the generation, transmission, distribution or sale of electric energy.

**Grid:** A network for transmission of electricity throughout the state, region or nation. The term is also used to refer to the matrix of an electrical distribution system.

**Hydroelectric Plant:** A plant in which the turbine generators that create electricity are driven by falling water.

**IOUs or Investor-Owned:** A utility company owned and operated by private investors and structured as a for-profit enterprise. While IOUs are typically owned by stockholders, most business decisions are made by a Board of Directors and company Management; their objective is to supply consumers with electricity while making profits that can be returned to the investors.

**Kilowatt (kW):** A measure of the rate of power used during a preset time—minutes, hours, days months; equal to 1,000 watts. In the abbreviation, the W is capitalized because the unit was named to honor one of Scotland’s great inventors, James Watt, who coined the term “horsepower”. (see Watt)

---

<sup>10</sup> Missouri Public Service Commission

**Kilowatt-Hour (kWh):** A common unit of electric energy; a kilowatt-hour is 1,000 watts used for one hour. For example, a kilowatt-hour is equivalent to the electricity ten 100-watt bulbs will use in an hour. In addition to charges for basic service, utilities charge consumers for electricity using a formula of cents per kilowatt-hour.

**Market-Based Price:** A price set by supply and demand, mutual decisions and actions of many buyers and sellers in a competitive marketplace.

**Megawatt (MW):** A larger unit for measuring electricity equal to 1,000 kilowatts or one million watts. Utility companies, power generating plants and very large users of electricity are the primary users of the term. Typical power plants generate in excess of 100 MW every day while one very large plant in Missouri with multiple generating units produces in excess of 2,000 MW. A megawatt would provide enough power to supply 330 homes for one hour on a hot summer's afternoon.

**Monopoly:** A single entity which has exclusive control of a service or commodity. The electric industry is considered one of the last natural monopolies in the US because until restructuring is enacted in a given state, a single power company usually has the exclusive right to serve all the customers in its territory.

**Price Cap:** A level above which regulated prices may not rise, the price is determined and fixed.

**PSC:** The Missouri Public Service Commission.

**Restructuring:** The act of changing how something is organized. For the electric industry it refers to separating or unbundling the operations and charges of traditional monopoly electric utility organizations (i.e. the currently combined costs for generation, transmission and distribution of electricity). Restructuring is expected to bring retail competition to the generating portion of the industry. This would allow customers to choose the source of the power they use and the price they are willing to pay for that power.

**Rolling Blackouts:** A controlled and temporary interruption of electric service. These result when a utility is unable to meet heavy peak demands because of an extreme deficiency in power supply. Power supply for groups or areas of consumers is shut-off to reduce the necessary load.

**Rural Electric Cooperative:** (also commonly called a co-op) An electric utility legally established to be owned by and operated for the benefit of those using its service. Co-ops return any excess profits made from the sale of electricity back to the members. Co-ops generate, transmit, and/or distribute supplies of electric energy to a specified area not being serviced by another utility. Such ventures are generally exempt from Federal income tax laws. Most electric cooperatives have been initially financed by the Rural Electrification Administration, U.S. Department of Agriculture.

**Spot Market:** Market that facilitates short-term purchases of electricity from generation surpluses available on an irregular basis. In times of peak energy demand, generation surpluses are low and prices on the spot market escalate sharply or spike. In times of low demand, electricity can often be purchased on the spot market at below average rates.

**Vertical Integration:** An arrangement whereby the same company owns all the different aspects of making, selling and delivering a product or service. In the electric industry, it refers to the historically common arrangement where a utility would own its own generating plants, transmission system and distribution lines to provide consumers with all aspects of electric service.



**Watt:** An electrical unit of power in the International System of Units; one horsepower is equivalent to approximately 746 watts. For a more common example, an average light bulb requires a constant supply of 60 watts of energy to illuminate. The unit was named to honor James Watt, who coined the term “horsepower”.

**Watt-Hour:** One watt of power expended for one hour. A more common term is kilowatt hour.

